APPLICATION OF RASPBERRY PI FOR PROTECTING PROPERTY

SCIENTIFIC PUBLICATION

Compiled as one of the requirements of completing the Undergraduate Program at the Department of Electrical Engineering Faculty of Engineering

PROGRAM STUDY ELECTRICAL ENGINEERING
FACULTY OF ENGINEERING
UNIVERSITAS MUHAMMADIYAH SURAKARTA

2021

APPROVAL PAGE

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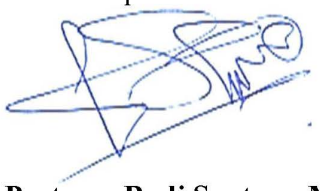

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ENDORSEMENT PAGE

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On Wednesday 30, June 2021
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TESTIMONY

I barely declare in this final project there is nothing has ever submitted, in a college and in my knowledge there is also no work or opinion that has been written or published, except in writing references in the manuscript as mentioned in the bibliography. If any incorrect statement found it , I will be fully responsible.

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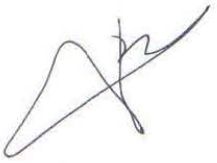

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APPLICATION OF RASPBERRY PI FOR PROTECTING PROPERTY

Abstrak

Raspberry pi adalah komputer mungil yang sangat luar biasa dan memiliki pada keunggulan kartu SD yang diciptakan tanpa henti untuk menginspirasi generasi pelajar agar berkreasi. Prosesor ARM (Advanced RISC Machine) pengguna komputer di jantung sistem Raspberry pi adalah sistem Broadcom BCM2835 pada prosesor multimedia chip SOC. Makalah ulasan ini memberikan deskripsi tentang teknologi Raspberry pi yang merupakan komputer super kuat. Ini membahas keseluruhan sistem arsitektur dan desain komponen perangkat keras disajikan secara rinci.

Kata kunci: Raspberry pi, aplikasi, property, melindungi,

Abstract

The Raspberry pi is a super powerful, tiny computer having the advantage of SD card which is invented without despair of inspiring generation of learners to be creative. The computer user ARM (Advanced RISC Machines) processor at the heart of the Raspberry pi system is a Broadcom BCM2835 system on chip, SOC (system operation computer) multimedia processor this review paper provides the description of the Raspberry pi technology which is a super powerful computer. It introduces the overall system of architecture and the design of hardware components are presented in details.

Keywords: Raspberry pi, application, property, protecting.

1. INTRODUCTION

The development of science and technology, especially in the field of electronics, has developed rapidly. These developments are in line with the increasing demands of the community for high-simplicity goods produced by the technology. To support high quality, many industrial processes switch from manual systems to automatic systems, with the role of human being getting smaller. It requires a performance support tool in the industry. One of the tools is a raspberry pi that can replace human jobs related to repetitive activities. Raspberry pi is a small device special as tiny computer, which deals with Linux system, controlling and utilization. Nowadays raspberry pi community in everyday have taken over some of their daily procedures. The range of raspberry pi utilization is very wide, through to very sophisticated ones needed for space exploration. A large raspberry pi manufacturing equipment exists in UK, supplying the motion required in manufacturing processes such as arc welding, spray painting, assembly, pick and place, cutting, milling, drilling, etc. Of this class of equipment, an increasingly popular type of raspberry pi design. Different kind of raspberry pi configurations are available such as keyboard. One type of Raspberry pi I'm using in this is spectacular project. With the increasingly raspberry pi industrial in world special in UK, many students are interested to learning about raspberry pi. Meanwhile, to make raspberry pi robots in schools around the world. For this reason, I decided to use Raspberry Pi as element of the project. That can be used to determine and contribute the community. I determine to used raspberry pi on this is project, analyses the project forward, the process of raspberry pi is orientation and unbelievable. The operation system is difference than windows in raspberry pi devices. So in this Final Project, I will design and create and protect the property by raspberry pi devices (guardian) which is a representation of the video or the pictures. These article will be develops by perseverance and the hardware had unique an operation systems.

1.1 Problem formulation

Insecure problem has been reveal on area. The project has been trying to figure out. Also peace was not fundamental of the area. The area has been obviously unsafe. The strategy place without security. Each one on the area been fear of crime and uncomfortable place. The area has been known as crime area.

1. 2 Research goal

In spite of the problem as on problem formulation, motion eye has figured out the solution. As peace is fundamental of each society, the motion eye bring peace on area. By using motion eye software the peace becomes elements on the specific place. So motion eye solve the problem simply by web camera. The area becomes hundred per cents secure. After motion eye software each one has being in comfort zone environment. Eventually I have had problem with SMTP. I didn't know what is SMTP is. By perseverance I got the point. SMTP is Simple Mail Transfer Protocol.

1.3 Research benefit

The benefit of this research as below.

1. Ability to make an intellectual system with specific component of Raspberry pi
2. Easily handle the problem by raspberry pi component.
3. Protecting the closure.

2. METHOD

2.1 Study literature

Literally study literature is figure out by engaging with magazine or journals and any type of books. Definitely literature encourage and support each one becomes aware about what he/she is doing. Otherwise knowing about the project more deeply than before. Studying literature makes the person intellectual and wise than someone hasn't study literature at all.

2.2 System Development Life Cycle

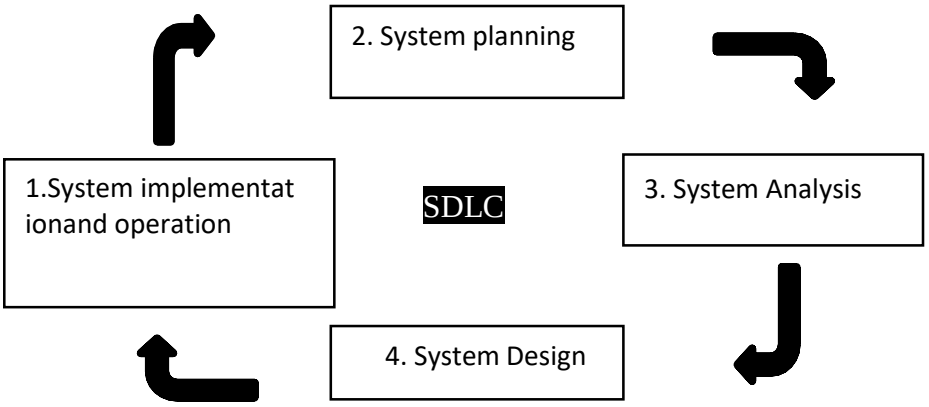


Figure 1. Diagram system

Objective explains the point and various phases of system development life cycle SDLC as shown in Figure 1. System implementation is the processing and defining how does information system could be built. The system design ensuring entire information system is operated used. System planning has done by the users whose have faith in future and envision of the future. They built system. The system design is a process of planning a new system or replacing an existing system by defining its components or satisfy the specific requirements before planning. The only language computer has been used is binary language. Its mean representing any things in computer to one and zero. Source code is the language ahuman can understand. Compiler is processing the source code to machine code. Machine code is the language has been used in computer known as one and zero. Eventually source code should be compiled into machine language before the code is run on a computer. System design gives the following outputs for design. System design is the phase that bridges the gap between problem domain and the existing system in a manageable way. This phase focuses on the solution domain, infrastructure and organizational changes for the proposed system. A data schema,often a relational schem a data.

To define the tables files and columns data-items. A function hierarchy diagram or web page map graphically describes the program structure, actual or pseudo for each module in the program.

Control is a process of recording the information for any reference or operational purpose. It helps users, managers, and staff, who require it. It is important that prepared document must be updated on regular basis to trace the progress of the system easily.

After the implementation of system if the system is working improperly, then documentation helps the administrator to understand the flow of data in the system to correct the flaws and get the system working.

Programmers or systems analysts create program and system documentation. Systems analysts are responsible for preparing documentation to help users learn the system. In large companies, a technical support team that includes technical writers might assist in the preparation of user documentation and training materials.

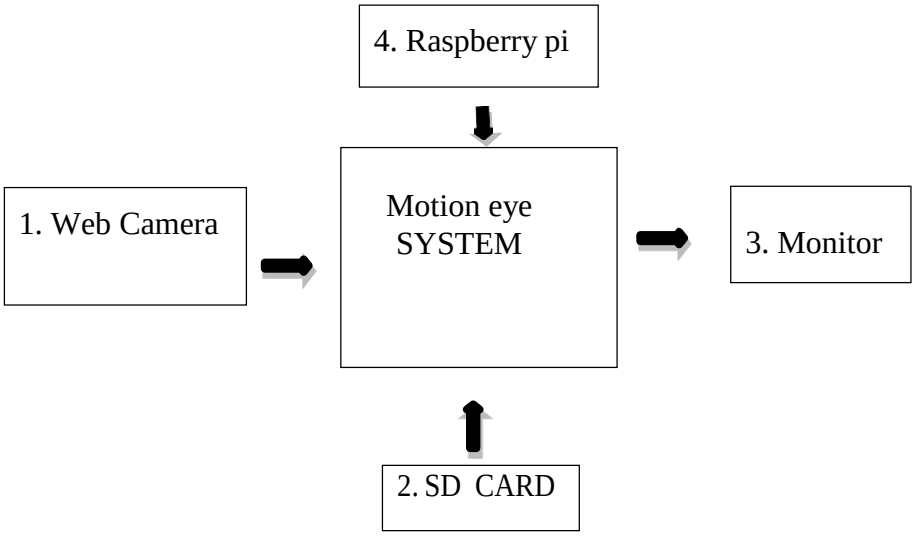


Figure 2 Raspberry pi Hardware

Block diagram in Figure 2 Raspberry PI that is utilized as main processing unit.

Initially webcam is interfaced with Raspberry pi.

1. Camera connected directly with raspberry pi.
2. SD card within motion eye software in raspberry pi.
3. The monitor connected with raspberry pi.
4. Raspberry pi hardware

2.3 Motion EYEOS Software.

It has been developing and processing the image within either large video streams or pictures. Obviously its open source software .The software is suitable for faster cameras. Highly resolution in genius camera mode allows an embedded image processing in officially time.

2.4 Install Motion Eye OS on Raspberry pi

Each Raspberry pi has its Eye motion. Simply I use raspberry pi 4 to be installed exactly. The same software of model 4 otherwise undoubtedly won't work or it hasn't figured out as the results.

1. Go to any kind of web browser https:www.sdcard.org/download in SD card.
2. Install motion eye into SD card.
3. Connect SD card connected to computer.

2.5 SSH Connection

SSH or secure shell is a network protocol that allows both devices to connect with each other securely. It being created as a secure way of communication that encrypts data through a tunnel. With SSH also we can see the data has been transferred SSH is literally implemented using the client server model. One computer is obviously called the client and another machine acts as the SSH serve

2.6 Linux

Linux is an operating system nowadays Raspberry pi has been using it is an open-source operating systems. A few devices have been used to Linux system operation.

It has been revealed in this twenty-first century still new systems. Linux is faster than other operating systems. There too many reasons Linux faster than other operating systems. The users of Linux are a few and also a few devices have been using Linux software.

2.7 Raspberry pi Hardware and HDMI and Internet Cable

The Raspberry Pi made in UK and designed for the hobbyist maker. Pi is a tiny computer, developed at the Raspberry Pi Foundation provide an easy to use the version of Debian Linux called Raspbian . As we can see in installation step further by configuring remote access and Connection.

2.8 Google Drive

I used Google Drive as my temporary memory. I receive the entire data in Google Drive. Call temporary memory because the data cannot be there forever. The data only be there for a limited time. Automatically I will lose the data from Google Drive.

2.9 VNC

Virtual network computing (VNC) necessary to work directly onRaspberry pi. The user may figure out with another device. VNC is a graphical desktop sharing the operation system of Linux directly with another device.

2.10 Static IP address

A static IP address is simply an address that hasn't change. Once the devices are assigned a static IP address that number definitely will be the same as it's until the device either decommissioned or network architecture changes .Static IP address is usually used by servers.

2.11 TOR

TOR is a hundred percent open-source software enabling communication through The Internet. TOR is used to make IP address Invisible from each user in public internet connection.

Internet connection. Thousands of million volunteer-run server nodes. The Relay system has been used to hides IP address absolutely without any cost. Because TOR is an encryption system. TOR is a free network and also unrevealed users identity online via multiple layers of encryption. It's useful.

2.12 Proxy

Proxy is server between users and the rest of the internet. Here are a few kind of proxies. Transparent proxy: When the user use on web server receive an exactly IP address. Anonymous proxy ensure not to pass user IP address to the websites and services user use. High anonymity proxy is known as an elite proxy basically website hasn’t been able to attack.

2.13 Difference between Static and Dynamic IP

Figure 3 Static IP address

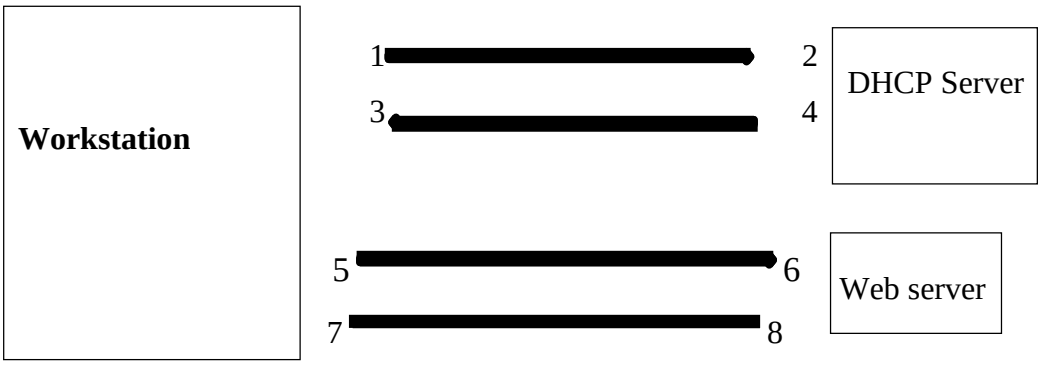


Figure 4 Dynamic IP address

Table 1: Comparison between Static and Dynamic IP

Static IP	Dynamic IP
Less secure	Couple of risk than static
cost high	cost less

Precisely Static IP address is better than Dynamic IP. Static IP doesn't change at all if the user has static IP, and dynamic it changing. Static IP is not free. But dynamic is definitely free. Though the users have control over static IP, and in dynamic doesn't. Lastly this project use dynamic IP address.

2.14 VPN

Virtual Private Network (VPN) definitely necessary for the user. It keeps the data of user safely on public internet connection. The point of VPN is to disappear the data from online strangers. Usually VPN used to guard against hackers on public networks. Literally useful to unrevealed user IP address personaldata on any network. VPN is unnecessary at home than in public because home network had security as username and password to sign in. A few users still use a VPN at home to protect some from online tracking or any kind of content. On each unsecured internet connection specifically in public WI-FI the hackers can simplicity intercept anything of send and receive.

2.15 Raspberry pi Own loud

Own loud is a file hosting application that each users can create a personal online data storage space. The users can access to their files via a web interface. Simply the user can also upload and download the data and synchronize on the desktop client and device apps functioning as a file server.

2.16 Cybersecurity

Cybersecurity is familiar to all of us as technology users. Cybersecurity is keeping user's desktop, laptop, own phone from the adversary. Its means secure. All of us think about good security and bad security in real world each day. Statistically safe against adversary, the user try to keep their laptop or desktop or phone secure. And one of those most popular mechanisms is of course pass Words. The password is some types of phrase some kind of numbers that the users configures to device. With that ideally the only user knows that password can getinto the device by using that password. Some of users haven't had the password. Itmean they don't worry but anyone around them getting into the device. But shouldconcede or recognize that it is much easier for someone to get into device laptop or desktop. A few years ago, a researchers were determined by a security researchers who found the most common passwords in the world. Mostly 123456,was the most common password. Some users does not try very hard to come up with their password. It is also researchers found as second popular password when the user thinks he has being smart enough having password as 333333. It was also popular. Finally, 123123. Was also used on phone or websites. Indeed another system has minimum password length. So the term of art in computer science that of brute force attack. This refers to an adversary someone who is out to get into device. They don't just go try random numbers necessarily as popular password number in the world. Brute force attacks pretty much just means that the adversarydoes not necessarily know anything about the user passwords or names. And literally they do have a lot time or a lot skill they will try all possible passwords as they can. Simply by passwords users can keep adversary a way.

3. RESULT AND DISCUSSION

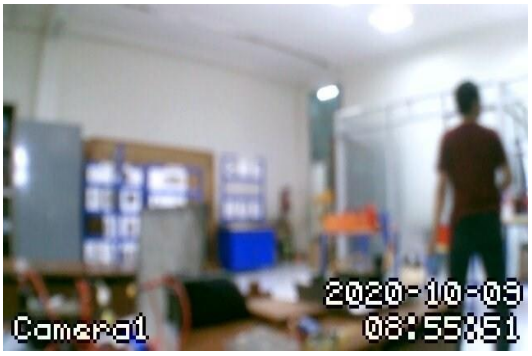
The motion eye system usually drop pictures in the email if anything in front of the camera and the distance between the camera and the person no long then four meter. If the distance less than four meter. System of motion eye working properly.

Table 2 The Details of The Result.

Distances	1M	2M	3M	4M
Picture 1				
Picture 2				
Picture 3				
Picture 4				

1.

2.



3.

4

Figure 5 Pictures from email inbox

Each picture has a different time zone and different distances. The distance of first picture is probably one meter as it seems a little bit continued.

The distance of second picture is definitely two meters. The sign of time has been revealed on it. It identifies the difference between first and second picture. The sign and the time zone are usually revealed on the picture.

The distance of third picture is obviously three meters between the camera and the person. At the setting of motion eye system anything has been identify on it the user won't add anything extra.

Lastly a picture as it is revealed somehow far and wasn't clarity as the first or second picture on the screen. It has been identified the distance of last picture as four meters. So more than four meters the system of motion eye doesn't record anything because the distances too far from the camera. As simple as that.

I was having problem with SMTP. I didn't connect SMTP and I didn't know even what SMTP was. I start doing research and watching video on you Tube eventually I got to know the mean of SMTP. Simple Mail Transfer Protocol trough servers. It also simple to get and send servers within minute.

SMTP has an expert servers of processing the data as checking and server knows the details of a services. Internet connection also, I have been having horrible a problem with connection.

Raspberry pi has two ways connection: wireless connection and cable. But wireless doesn't work on this project, only cable. Cable connection has been working on the project.

The internet connection address must be from same address otherwise it is probably not going to work. The user should log in his email address to get a notification. Simply without engaging or log in both interconnection and setting user an email with system of motion eye. A user definitely couldn't get any kind of updating. To get update the user must ensure entire system has been working however if not probably doesn't happen with the user.

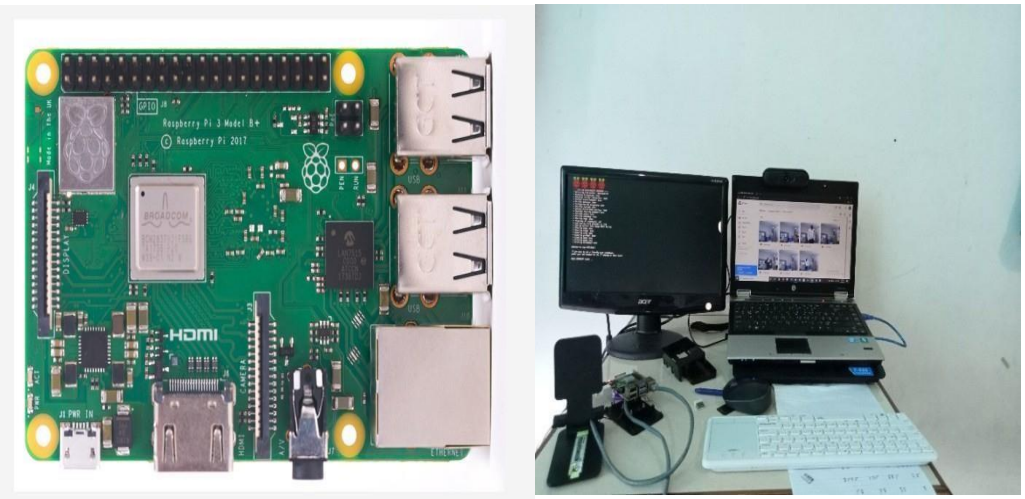


Figure **6** All Components Connected Raspberry pi

Figure 6 shows the desktop that the user had set entire components from the area of the desktop Otherwise, the check point wasn't a compulsory from the desktop only. It could be from any kind of devices as long as the user know the email address.

A dynamic IP address usually changes. The project has use a dynamic IP address. It is impossible to access a server continually with the same address as dynamic IP. The user always enter with totally different IP. The users usually struggle with new IP address. A dynamic IP address is limitless. Addresses allow the users to reuse IP addresses.

When the user using static IP they have a control over their IP rather than dynamic. As this project use dynamic, so I don't have any control on the IP address at all. It is keep changing randomly. The Figure 6 is entire hardware has being connected together, and the Figure 5 is. Figuring out the result of the project or the project had been worked.

Setting an email is fundamental part of the notification. In order to engage the email with system of eye log in an email. The time zone setting is an element of knowing the date of an action. Literally without setting the time zone, the user can't know anything happen in front of the camera. But the data does not beas clarity. The users prefer anything to be revealed. All the pictures has a sign on it as the date.

4. CLOSING

The purpose of this project is for educational tool which can be used for study. The students will be easier to analysis Raspberry pi model B OR 400 & Zero as seeing the hardware. Improving the implementation of Raspberry pi solutionsis practical. Evaluating the Raspberry pi is more complex than other hardware. There are several methods to evaluate the Raspberry pi one of them is on this research. I highly recommend to whom he / she have desire to learn about evaluation of technology to be huge funs of Raspberry PI. Lastly this is project made for protecting property only Raspberry pi has become a popular hardware device nowadays. Simply it has so many program languages already with it. The user don't need to install any kind of program language anymore, as Scratch and Python, C++.

ACKNOWLEDGMENT

The author thanks a lot to people who gave motivation and help in arrangingfinal assignment as follows.

1. Sir Ir. Pratomo Budi Santosa, M.T. as the supervisor who has been withme always with his time.
2. Friends of mine usually engage with me encouraging and supporting.
3. Head of Electrical Engineering. Muhammadiyah University of Surakarta,Mr**.** Umar, S.T.,M.T.
4. To international class mates whom always provide input and guide me.

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